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Have Trade Policy Reforms Led to Greater Openness in Developing Countries?

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The developing countries that began trading more openly in the 1980s did so incrementally—shock therapy was uncommon. Asian countries led in trade reform and openness, so their export-led growth performance was not surprising. African countries trailed in reform and have still not become as open as other countries.

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Summary findings

Developing countries experienced a revolution in trade policy in the 1980s and 1990s, but it is unclear how much real openness increased. After all, they had started with multiple, often redundant, trade restrictions. And it is unclear how changes in openness should be measured.

The most appropriate measure of openness is based on imports of consumer goods, argue Andriamananjara and Nash, since these imports commonly face the biggest trade barriers. After developing several such measures, including a measure of the change in tariff equivalent protection, they explore the recent evolution of trade policy, using readily available trade data.

Openness has developed incrementally rather than overnight. In the early stages of adjustment, barriers to imports tended not to be reduced much. At first, the net reduction of incentives to produce import substitutes was minor, especially when currency depreciation is considered. Recently import barriers have been reduced more substantially, and since there has been little currency depreciation, incentives to produce import substitutes have declined.

Shock therapy was uncommon. A few countries moved quickly to eliminate nontariff barriers to imports and to adopt low, fairly uniform tariffs. But most countries tended to "peel away" redundant layers of trade barriers, one at a time. They usually began with the barriers embodied in rationing and exchange controls, proceeded to nontariff measures, and finally reduced tariffs. Each step may have reduced protection a bit but the big reductions apparently came only in later stages. Still, even gradual reform helped open up those economies.

The Asian countries tended to be most open both early and late. They were also above-average in reform efforts, by some measures, so their strong growth performance (based on exports) was unsurprising.

The African countries, whose trade policies were probably worst to begin with, made relatively modest progress initially. In recent years their progress has been substantial; whether they have improved as much as other countries depends on which measure is used.

Countries tied to the French franc (for whom real devaluation was more difficult) showed less progress than nonfranc countries, illustrating the importance of the connection between devaluation and trade reform.

There is no evidence that rapid trade reform resulted in Africa's de-industrialization.

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Have Trade Policy Reforms Led to Greater Openness in Developing Countries?

Evidence from Readily Available Trade Data[1]

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I. Introduction

Measuring a country's degree of integration in the world economy and how this changes over time is important[1], but tricky. The main reason it is difficult to do is that there are a wide array of policy instruments used to affect trade, both imports and exports. In the simplest possible case, a uniform tax or subsidy on imports or exports with no other restrictions, measurement would be relatively simple. A reasonable measure of integration or ("openness") would be the rate of the tax or subsidy.[2] Apart from Hong Kong and Singapore, which are virtual free trade zones, no developing countries in the world have such a simple trade regime, though some come close (e.g., Chile). In the more common case of a non-uniform trade tax structure, the task is more formidable since even with the same average rate, the effect on trade will differ, depending on which goods are taxed at high rates and which at low. But the task is in almost all cases even more complex than this because all but a few countries use other, often multiple, barriers in addition to taxes. These commonly have included foreign exchange rationing, import licensing requirements, reference prices, domestic content requirements, and export licensing requirements. Recently, developing countries have even begun to follow the example of industrial countries and use antidumping actions to restrict imports.

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[1] World Bank (1995) shows how important integration is for developing countries.

[2] Even in this case, however, things are not completely straightforward. How much trade is affected by a given tax depends in part on structural characteristics of the economy, such as the substitutability and complementarity among nontradables, importables, and exportables (Sjastaad and Clements).

Given these multiple dimensions of trade restrictiveness, it is not surprising that there is no consensus on what constitutes the best, or even a reasonable, measure of openness. Many different measures have been used by different investigators. Baldwin (1989) correctly notes that measures of openness can either be based on outcome or incidence. The former infers information on the policy-induced trade barriers from data on the variables they presumably affect (prices or trade flows), while the latter are constructed from data on the actual barriers themselves.

The simplest outcome-based measure is the ratio of trade (usually imports plus exports) to GDP. Since this can be affected by structural characteristics of the economy, as well as external factors that affect the cost of trading (e.g., location, external transport links, etc.), more sophisticated analyses use the ratio adjusted for at least some of these factors. (See, for example, Balassa (1985), or section IV of the current chapter for a more detailed explanation.) Leamer (1988) has taken this technique one step further by constructing Heckscher-Ohlin-Vanek style factor endowment models that predict what would be a country's composition (not just volume) of trade without intervention, then using the average deviation of the actual from predicted values as a measure of openness or intervention[3]. One obvious problem with this approach is that the results are only reliable to the extent that the model used to form the counterfactual incorporates all the relevant determinants of trade. Another shortcoming is that these measures only capture a country's deviation from the cross-country average level (or, in the case of the Leamer index, the normal pattern) of trade restrictions. Thus, they can be thought of as relative, rather than absolute measures.

[3] Leamer uses the deviation of actual from predicted volume of trade as measure of openness, and the deviation of actual from predicted trade pattern as a measure of intervention.

Other outcome-based measures are import penetration ratios. These are intended only to indicate restrictions on imports and come in two flavors, one using the ratio of imports to GDP, the other the ratio of imports to aggregate consumption. The latter is probably a more reliable indicator of restrictive trade policy than the latter since in most developing countries, it is imports of consumption goods that are the most stringently restricted. However, using total imports to calculate this ratio implicitly assumes at a minimum that the proportion of consumer imports in total imports is the same across countries and time, so that the reason for a lower ratio it can be inferred to be tighter restrictions, rather than differences in the composition of imports.

The third generic variety of outcome-based measures are those calculated from a comparison of domestic and border prices of similar products. Where these can be calculated, they have the advantage (compared to some other measures, such as the average tariff rate) of capturing the effects of nontariff barriers, as well as tariffs. They also are easier to interpret economically than are some other quantity-based measures, which is one reason measures of this genre were used in the Uruguay Round negotiations. The major disadvantage of these measures is that they require data that are not readily available in many developing countries. Domestic prices of individual goods must be compared to the border prices of those same goods, adjusted for transport costs, distribution markups, and (unless the goods are exactly the same) quality differences. This kind of exercise is difficult and time-consuming, and has been carried out for few developing countries on a regular basis. Some investigations (World Bank, 1991) have used national accounts price index data to measure domestic vis a vis international prices. Differences between the domestic price of tradables relative to international norms are taken to indicate distortions in the trade regime. Apart from the crude nature of price comparisons from national accounts data, this kind of index has the shortcoming that trade restrictions will be underestimated in a country with a trade policy (typical in developing countries) of taxing both

imports and exports. In this case, the prices of importables are raised above world levels, while those of exportables are depressed. When the "average deviation" is measured across all tradables, the negatives offset the positives, and the index may be small even though the distortions are quite large.

A final class of outcome-based measure uses the exchange rate. The black market premium is sometimes used to indicate stringency of trade restrictions. This is a reasonable proxy for the excess demand for foreign exchange. However, demand for imports outside of official channels is only one source of excess demand for foreign exchange. The other major source is capital flight, which can create a high premium when the capital account is not open, even in an economy with a relatively open current account with few barriers. Another measure is movement in the real exchange rate. Trade restrictions appreciate the real exchange rate. While it is difficult to estimate the equilibrium real exchange rate level, it is clear that a trade liberalization will depreciate this level. Thus a real depreciation can be used to infer liberalization.[4]

Measures of import restrictions based on incidence of trade policy instruments include average tariff rates and indexes of non-tariff measures. Average tariffs can be measured as the average statutory tariff (unweighted or weighted by import shares or production shares) or as the average collection rate, calculated as the ratio of import duties collected to value of imports. The collection rate seems more appealing at first blush, since legal rates do not mean much when there are widespread exemptions or smuggling. But collection rates may be misleading, especially when exemptions are concentrated in goods that do not compete with domestic production and in imported inputs, as is common in developing countries. In such cases, this "escalated structure" (high rates on competing imports and low rates on inputs) can produce a low to moderate

[4] Alternatively, the real exchange rate can be considered a trade policy variable in the short run. On this interpretation, a depreciation is an incidence, rather than an outcome, measure.

collection rate, but high effective protection. For this reason, an average of statutory rates, preferably weighted by production shares, is probably the best of the tariff-based measures. A critical weakness of any measure based on tariffs is that the typical trade regime of developing countries restricts imports with other barriers. For many products, the tariffs are redundant, that is, they do not provide any additional protection for domestic producers. The tariff level is therefore not a good indicator of trade policy.

To remedy this shortcoming, measures of the prevalence of nontariff barriers are used. (See, for example, Erzan, et al (1989) and Laird and Yeats (1988)). These are usually just the number of product categories imports of which are subject to some kind of barrier divided by the total number of product categories in the classification scheme being used. Sometimes the numbers are weighted by import share or share in domestic production. The production-weighted index is probably the most useful as an indicator of how much the NTBs protect domestic industry. But even this is not very reliable, since the actual effect of the NTBs varies a lot across products and across countries, and this kind of index cannot show which are binding (and how much these raise domestic prices) and which are not.

Anderson and Neary have recently developed a "trade restrictiveness index", which in principle incorporates the effects of both tariffs and NTBs. Because of this, it is arguably the most theoretically defensible of any single measure. However, in the absence of domestic price data, empirical application requires assumptions about the effects of NTBs, and the results are sensitive to what assumptions are made.

The goal of the remainder of this chapter is to measure changes in trade restrictiveness (sections II and III) or the level of relative restrictiveness (section IV), using data which is published and readily available for most countries. In one sense, measuring the change is a more

modest goal than measuring trade restrictiveness per se. But for many purposes, the change is the more relevant issue.

Most of the measures reported in parts II and III are based on import penetration. However, unlike previous studies, this chapter uses various measures of consumption imports. The reason for this is simple: most countries use trade barriers to protect domestic production, and most domestic production in developing countries is concentrated in consumer goods. Changes in protection, therefore, should be more reliably measured by changes in this subset than by changes in total imports. Also, many countries treat food and fuel imports differently from manufactures, and impose few barriers and low tariffs on these products. For this reason, food or fuel imports are omitted from imports in some of the measures.

All of these measures were computed for a sample of 88 developing countries (listed in Appendix 1). Most of these countries were recipients of policy-based loans with significant trade policy components from the World Bank or IMF. The changes in the openness indicators are measured over two different periods for these trade adjustment loan (TAL) countries. In the tables below, for each variable, the "After" column shows the difference between the average of the 3 years after the first trade-related adjustment loan, compared to the average of the 3 years before the loan. The "Recent" column shows the change from the 3 years before the loan, compared with the most recent 3 years for which data is available, generally ending in 1992. For the countries that did not receive a trade adjustment loan before 1992 the comparison is the 3 most recent years versus 1980-82.

II. Indirect Indicators

The methodology used here follows Nash (1993), where it is applied to a sample of African countries. Table 1 reports the movements in seven trade related variables. Average and

median values of the movements are taken for five regions. Within each region, countries are grouped as Trade Adjustment Lending (TAL) countries or Non Trade Adjustment Lending (NTAL), as explained above. The countries in each region and in each sub-group are listed in the Appendix I. Comparing the "After" column to the "Recent" column indicates whether the variable has continued to move in the same direction in recent years, or has changed direction. For non-TAL countries, both columns are the same, and are based on the difference between the average value in most recent 3 years and the average for 1980-82.

The first four columns of Table 1 show the change in the real effective exchange rate (REER) and the black market premium (BMP) on exchange rate. Ceteris paribus, trade liberalization is expected to decrease these variables. On average, and within each region, TAL developing countries devalued their currencies in real terms, while NTAL countries (except in SSA) showed appreciation of their currencies .. Almost all groups show increasing openness ("recent" smaller than "after"). The only exception is the TAL subgroup for Europe, where there was a devaluation in "after" followed by a real appreciation in "recent". This result was mainly influenced by Hungary, the real exchange rate of which appreciated in response to inflows of foreign capital.

The BMP fell in TALs, on average, but increased in Non-TALs. Nevertheless, as the small median figures for non-TALs show, there were about as many non-TAL countries where the BMP increased as decreased. For almost all groups, the "recent" is smaller than "after", indicating continuing decline in the BMP. The greatest decreases were found in some African countries.

The remaining columns in Table 1 report the behavior of five different measures of import penetration in the domestic market. Imports as a fraction of GDP (M/GDP) increased for TALs but decreased for NTALs on average, as expected. Also, the data show an intensification of the import liberalization ("recent" greater than "after") for each group.

The next two variables are Consumer Imports as a percentage of Imports (CM/M), and Non Food consumer imports as a fraction of Non Food Imports (NFCM/NFM). These variables tell the same stories. Almost all groups and subgroups show increases in CM/M and NFCM/NFM. Comparing the "after" to "recent" columns, data for both variables indicate that import liberalization has intensified in most recent years ("recent" greater than "after") for almost all groups.

The last two variables are identical to the previous two, with the only difference being that the denominator is total consumption (CM/Con and NFCM/Con). Increasing shares of (non food) consumer imports in total consumption would indicate reduced protection. On average, developing countries show positive figures for both CM/Con and NFCM/Con. In all groups, except for EU-TALs, the "recent" figure is greater than the "after" one, indicating an intensification of the liberalization.

To sum up, on average, all the computed indicators show more openness in developing countries (negative changes for REER and BMP, and positive changes for M/GDP, CM/M, NFCM/NFM, CM/Con, and NFCM/Con). Moreover, each indicator shows a further decrease in protection in the most recent years. That is, the "recent" figure is more negative for REER and BMP, and more positive for M/GDP, CM/M, NFCM/NFM, CM/Con, and NFCM/Con.

III. Quantitative measures of movements in protection rates

This section quantifies the changes in trade policy in ways that can be more easily given an economic interpretation. One way of quantifying the effects of nontariff import barriers is to estimate the tariff that would produce the same effect, known as the "tariff equivalent' of the NTBs. Section a) below uses the methodology of Nash (1993) to estimate changes in the tariff equivalents. Section b) addresses the question of what has happened to the incentives of

producers of import substitutes. This is an important question which has relevance, for example, to the allegation that there has been de-industrialization in Africa caused by overly rapid trade reforms.

a/ Tariff equivalent of import restrictions (%δ(1+t))

The change in the tariff equivalent is calculated using the following import demand equation:

where M is imports in quantity terms, Y is income, P_M is import price in dollars, E is the real exchange rate, and (1+t) is the "tariff equivalent" of import restrictions. Taking logarithms, differentiating both sides, and re-arranging the terms shows that:

$$\%\delta(1+t)=\{\%\delta M-b\%\delta Y-c[\%\delta PM+\%\delta E]\}/c,$$

where %δ is the percentage change in a variable, and b and c are the import elasticities with respect to income and price. The values of these elasticities are fixed at b=1.25 and c=-1. Ideally, the elasticities would have been estimated for each country. However, when this was tried, the coefficients were highly variable, and often implausible in magnitude or of the wrong sign, at least partially due to the short data series available. The values used here are consistent with the range of values for these parameters estimated for a broad range of developing countries in other studies (see Pritchett (1987) and De Rosa (1992)).

The results of the exercise are largely consistent across the different definitions of imports used. In fact, results for each definition of imports are correlated to those of the others at the 0.90 level. The main results are summarized in Table 2. On average, developing countries (Tal and Non-TAL) had a decrease in (%δ(1+t)) for each definition of imports. The tariff equivalent fell

21 percent following the beginning of the adjustment process, and an additional 26 percent since then. Almost all regions and subgroups tell the same story, though the size of the decrease varies substantially. Latin America shows the largest reduction "After" by all measures, and by 2 of the 3 measures, the largest "Recent" reduction as well. The only major exception is the MENA region which by some measures shows increases in protection. For all definitions of imports and for all regions, the "recent" average is smaller (more negative) than the "after" one, indicating that protection has continued to decrease. One anomaly, and inconsistency with the results in Table 1, is the large reduction in the tariff equivalent protection in the NTAL countries.

b/Incentives for importable production (%δ(1+t)+%δREER)

Incentives for producing import substitutes depend not only on protection through commercial policy, but also on the real exchange rate. The change in incentives is estimated by adding (%δREER) to the estimated value of (%δ(1+t)). Since this is derived directly from the data used above, it should not be interpreted as an independent indicator of trade policy.

On average, developing countries showed a decrease in the variable for each definition of imports, though the "After" reduction is only on the order of 3 to 7 percent, while the "Recent" reduction is between 20 and 30 percent. Almost all regions and subgroups tell qualitatively the same story, though some show small increases in the "After" column. The only major exceptions are the MENA-Non-TAL subgroup which shows a large increase, and the Asia TAL sub-group, which shows a moderate increase. Moreover, for all definitions of imports and for all regions, the "recent" average is smaller (more negative) than the "after" one, indicating more reduction in incentives for import substitute production in recent years. In sub-Saharan Africa, where the allegations of deindustrialization caused by overly rapid reform have been loudest, the evidence here indicates that incentives increased modestly during the beginning of the adjustment process,

then began to fall, with the net effect through 1992 being a reduction in incentives by around 18 percent.

The evidence here shows that for most countries, especially the trade reformers, incentives for producing import substitutes were reduced only modestly at the beginning of the adjustment process, and in many cases were improved by the combination of commercial policy reforms and devaluation. This is one reason why a substantial devaluation seems to be a key ingredient of most successful trade reforms, because it buffers the immediate negative impact on the import substitute sector. This observation is not new, but it is interesting to see here the quantitative significance of the point. Of course, in more recent years, the continually falling protection has resulted in a more significant reduction in incentives to produce in previously highly protected sectors, as would be expected.

IV. Measures Based on Structural Models

An alternative measure of policy-induced trade openness of a country is the deviation of the volume or composition of its trade from the predicted value of the variable in the absence of restrictions. The way this idea is usually empirically implemented is to estimate a structural model of the determinants of trade using cross-country data, then plug in the relevant values of the country's data to derive the predictions. The structure of the model is the major difference among the studies that have used this class of measures. Leamer (1988), for example, used a Heckscher-Ohlin model in which trade flows are determined by resource endowments. Others have used models in which the relevant determinants are other characteristics of the economy, such as per capita income, size, and proxies for transport costs. Here, the latter approach is used. A modified gravity model of non-mineral export trade similar to that used by Balassa and Bauwens (1987) is estimated. The variables affecting trade in this model are income per capita, total population, mineral exports and distance from the 5 most important export markets. The latter two variables are intended, respectively, to capture the "Dutch disease" phenomenon and to represent propinquity to markets and therefore transport costs. Two models are estimated, one using as the dependent variable non-mineral exports per capita and the other using exports as a percentage of GDP, for the two periods 1980-82 and 1990-92. The year 1992 was the last for which all relevant data were available for the sample countries.

- ***Per Capita Model (PC):***

$$LNXCAP_i = a_0 + a_1 LGDPCAP_i + a_2 LNPOP_i + a_3 XMCAP_i + a_4 WDIST_i$$

- ***Percentage of GDP Model (PG):***

$$LNXGDP_i = a_0 + a_1 LGDPCAP_i + a_2 LNPOP_i + a_3 XMGDP_i + a_4 WDIST_i$$

where:

LNXCAP$_i$: Per Capita non mineral exports (in log) of country i,
LNXGDP$_i$: Non Mineral exports as a percentage of GDP (in log);
LGDPCAP$_i$: Log of per capita GDP,
LNPOP$_i$: Population (in log);
XMCAP$_i$: Mineral exports per capita;
XMGDP$_i$: Mineral exports as a percentage of GDP;
WDIST$_i$: Weighted distance from five most important export partners.
Expected coefficient signs: $a_1 > 0$, $a_2 < 0$, $a_3 < 0$, $a_4 > 0$,

The full regression results for each model, as well as the sources used for the data, can be found in Appendices 2 and 3. In general, except for the weighted distance[5], the regression coefficients were significant at 90 percent level using a one-tail test, and had their expected signs. The goodness of fit for the regressions (Adj R-sq) range from 0.28 to 0.71, which is acceptable for this kind of cross country regression.

Percentage deviations of actual from hypothetical values of the dependent variable are used as an indicator of trade orientation. Positive (negative) figures are taken to represent a low (high) degree of restrictiveness. The countries in the sample are ranked by these deviations, taking the country with the largest deviation (lowest restrictiveness) as number one. The results show a positive correlation (at 0.84) between the rankings from the PC model and from the PG model.

To see the change over time in the ranking of a country relative to the others in the sample, the 1990-92 rankings were subtracted from the 1980-82 rankings. A positive figure means an improvement in the rankings, that is, greater openness, relative to the others. Note that this sheds no light on the question of how developing countries' trade policies changed in absolute

[5] As Pritchett (1991) notes, proxies for transport costs have had a mixed record in these structural trade flow models.

terms, either individually or collectively, but rather shows only the changes of individual countries or sub-groups relative to the sample as a whole.

Keeping in mind that 1 is most open, and that a positive change in the rankings indicates an improvement, Table 4 gives an summary of the results. For both models, the results show that Asia was the only region that had lower (i.e. more open) average rankings than the whole sample. Half of the Asian sample are ranked 13th or better. In 1990-92, the data show that on average, trade adjustment lending (TAL) countries are more open than Non-TALs (with the exception of Asia in the PC model).

Between the two periods, Asia (AS), Middle East and North Africa (MENA) and Sub Saharan Africa (SSA) show improvements in average rankings. On the other hand, Europe (EU) and Latin America and Caribbean (LAC) dropped. The table also shows that in AS, MENA, and SSA, Trade Adjustment Lending countries had greater changes in average rankings (i.e., showed more improvements) than NTALs. In LAC and EU, the reverse was true, though the TAL countries still ranked ahead of their non-adjusting counterparts.

V. Correlation between different openness indicators

One would expect a negative correlation between the changes in the "exchange rate" variables (REER and BMP) and the movement in the different measures of import penetration (M/GDP, CM/M, NFCM/NFM, CM/Con, and NFCM/Con), and a positive correlation among the latter group. However, no such correlations were found to be above the 0.40 level. The only strong correlation (using both Pearson and Spearman coefficients) that could be found was between very similar variables such as CM/M and NFCM/NFM, or CM/Con and NFCM/Con. These results may seem surprising, but are consistent with those of Pritchett (1991), who found

that a wide spectrum of measures of openness, independently developed by numerous investigators, were uncorrelated.

VI. Conclusions

The lack of correlation notwithstanding, the several measures of changes in trade policy reported in the current chapter tell very similar stories about what happened in the 1980s and early 1990s. Sections II and III show that developing countries on the whole have become significantly more open. However, this process was incremental, rather than abrupt in most countries. The barriers to imports were not reduced much on average in the early stages of the adjustment process. In fact, when the currency depreciations are taken into account, the net effect was to reduce very little, if at all, the incentives to produce import substitutes. But the evidence shows that import barriers have been reduced more substantially in recent years. Since this has not been accompanied by large real depreciation of currencies, as occurred at the beginning of the adjustment process, the overall incentives for import substitute production in most countries in recent years seem to be substantially lower than they were before adjustment programs began.

The evidence here is broad brush in nature, so there are certainly exceptions. But the finding that trade policy reform has been a gradual process in most developing countries is consistent with case studies of a number of countries. A few countries, including Chile in the 1970s and Mexico in the 1980s, undertook rapid elimination of non-tariff barriers to imports and moved quickly to regimes of very low and fairly uniform tariffs. But in most countries, the pattern was one of "peeling away" the redundant layers of trade barriers one at a time. This usually began with the barriers embodied in exchange controls and rationing, proceeded with the non-tariff measures, then finally reduced the tariff structure. Each of these steps may have

reduced actual protection a bit, but the evidence implies that the big reductions only come in the later stages. Thus, it appears that "shock therapy" has not been as common as is sometimes alleged, at least in trade policy reforms. At the same time, it is reassuring to see that by a number of measures, the reform efforts have had an impact, albeit gradual, in opening up the economies of developing countries.

The evidence here is also instructive for what it shows about relative openness and intensity of reform. The Asian countries in the sample were on average the most open both in the early and later periods (section IV) and also showed above-average reform effort by the measures in sections II and IV (though not in section III). Based on this, their well-known strong growth performance based on exports is not surprising. The African countries, which began the adjustment period with arguably the worst trade policies (see Nash (1993) and Foroutan (1993)), made relatively modest progress at first. Their progress in recent years has been substantial, though whether they have improved on average as much as other developing countries depends on which measure is used. Section IV indicates a very small relative improvement in their ranking. When the African sample is broken into countries whose currencies were tied to the French franc (and for whom real devaluation was more difficult) and those that were not, the latter countries showed more progress in trade reform. This emphasizes the importance of the relation between successful trade policy reform and devaluation. In any case, there seems to be no evidence here to support the charges that rapid trade policy reform resulted in de-industrialization in Africa.

Table 1: Performance of trade policy-related economic variables

	REER		BMP		M/GDP		CM/M		NFCM/NFM		CM/CON		NFC/CON	
	After	Recent	After	Recent	After	Recent	After	Recent	After	Recent	After	Recent	After	Recent
Average Dev.	-10.13	-16.47	-15.36	-21.64	0.42	2.20	0.66	1.20	0.95	1.78	0.01	2.46	0.18	2.27
TAL	-19.43	-26.59	-23.18	-32.51	1.05	3.53	-0.14	0.62	0.15	1.31	-0.05	3.23	-0.01	2.78
NTAL		12.51		4.36		-1.27		2.68		2.99		0.19		0.76
Asia	5.20	-2.74	9.79	3.50	0.37	1.62	1.02	1.45	2.34	3.07	1.17	2.59	1.66	3.03
TAL	-7.08	-21.83	-2.63	-14.31	-1.35	0.97	-1.69	-0.90	-1.23	0.13	-1.12	1.53	-0.61	1.92
NTAL		19.52		24.27		2.37		4.18		6.50		3.83		4.32
Europe	1.11	5.75	-22.56	-33.93	1.23	1.94	3.91	7.99	4.28	7.80	0.90	1.18	1.04	1.37
TAL	-4.18	3.54	-29.49	-50.76	1.51	2.78	-0.08	6.05	-0.16	5.12	-0.74	-0.81	-0.49	-0.45
NTAL		9.06		-8.70		0.67		11.87		13.16		4.18		4.10
LAC	5.65	2.55	-16.66	-29.01	1.32	4.81	0.96	1.30	1.34	1.93	-0.21	5.65	-0.12	4.28
TAL	-12.42	-16.14	-15.43	-31.33	1.06	5.71	0.85	1.31	1.74	2.53	-0.34	7.46	-0.03	5.84
NTAL		96.00		-21.50		2.12		1.29		0.12		0.20		-0.39
MENA	-10.74	-11.43	4.23	4.83	5.19	5.22	2.43	2.20	3.03	3.67	1.96	1.72	1.54	2.09
TAL	-30.05	-31.20	-11.26	-10.36	7.97	8.01	0.49	0.07	1.38	2.49	5.53	5.18	3.86	4.68
NTAL		18.23		35.19		-5.94		5.03		5.24		-5.20		-3.10
SSA	-24.25	-34.23	-24.99	-29.71	-0.82	0.57	-0.55	-0.30	-0.77	-0.18	-0.86	0.69	-0.65	0.83
TAL	-26.77	-40.54	-32.08	-38.82	0.61	2.44	-0.38	-0.07	-0.49	0.23	-0.33	1.47	-0.33	1.39
NTAL		-17.20		-1.38		-6.01		-1.42		-2.15		-4.59		-2.90

All Figures denote change in the variable, except REER figures, which are percentage change, and Average level figures which are in percentage. REER: Real Effetive Exchange rate, BMP: Black market premium, M: Total imports, CM: Consumption Imports (food, textiles, and other manufactures), NFCM: Non food consumption imports, NFM: Non food imports; TAL: Trade Adjustment Lending Countries, NTAL: Non Trade Adjustment Lending Countries, LAC: Latin America and the Caribbean, MENA: Middle East and North Africa, and SSA: Sub Saharan Africa. See text for definitions of the "after" and "recent" columns . See Appendix for Data definitions and sources.

Table 2: Change in tariff equivalent of imports restrictions (% (1+t))

	Cons Imp		*Non Food Cons Imp*		*Non Fuel Imp*	
	After	Recent	After	Recent	After	Recent
Average Dev Countries	-21.05	-47.67	-24.73	-55.04	-22.49	-51.03
TAL	-11.99	-44.88	-14.05	-51.50	-12.95	-48.07
NTAL		-59.53		-70.10		-63.82
ASIA	-2.84	-16.26	-15.43	-34.77	-9.62	-28.93
TAL	23.81	0.81	21.38	-11.78	20.32	-12.78
NTAL		-40.16		-66.95		-51.53
EUROPE	-32.50	-114.75	-32.04	-103.41	-33.47	-112.14
TAL	-32.50	-114.75	-32.04	-103.41	-33.47	-112.14
NTAL		N.A.		N.A.		N.A.
LAC	-33.99	-55.64	-36.90	-62.09	-35.85	-60.35
TAL	-11.25	-37.24	-15.78	-46.01	-14.32	-43.71
NTAL		-147.69		-142.46		-143.51
MENA	27.28	12.08	15.85	-12.33	23.96	5.61
TAL	10.57	-9.70	-1.31	-38.89	6.24	-18.23
NTAL		77.41		67.34		77.11
SSA	-26.60	-58.09	-26.00	-60.51	-24.96	-56.23
TAL	-23.64	-59.24	-23.03	-62.04	-21.63	-56.81
NTAL		-49.29		-48.79		-51.59

TAL: Trade Adjustment Lending Countries, NTAL: Non Trade Adjustment Lending Countries, LAC: Latin America and the Caribbean, MENA: Middle East and North Africa, and SSA: Sub Saharan Africa. See Appendix for Data definitions and sources.

Table 3: Change in incentives for importable production

	Cons Imp		*Non Food Cons Imp*		*Non Fuel Imp*	
	After	**Recent**	**After**	**Recent**	**After**	**Recent**
Average Dev Countries	-2.85	-22.19	-6.53	-29.57	-4.58	-25.95
TAL	1.13	-22.76	-0.93	-29.38	-0.07	-26.38
NTAL		-19.80		-30.37		-24.10
ASIA	5.61	-1.47	-6.97	-19.98	-1.16	-14.14
TAL	17.45	5.30	15.01	-7.29	13.95	-8.29
NTAL		-10.95		-37.74		-22.32
EUROPE	-30.48	-98.20	-30.02	-86.86	-31.44	-95.59
TAL	-30.48	-98.20	-30.02	-86.86	-31.44	-95.59
NTAL		N.A.		N.A.		N.A.
LAC	-12.29	-35.52	-15.19	-41.96	-14.14	-40.21
TAL	-4.41	-32.28	-8.94	-41.06	-7.47	-38.75
NTAL		-51.69		-46.46		-47.52
MENA	9.74	-3.96	-1.68	-28.37	6.42	-10.43
TAL	-7.09	-25.35	-18.97	-54.55	-11.42	-33.89
NTAL		60.24		50.16		59.94
SSA	1.02	-16.57	1.62	-18.99	1.64	-16.25
TAL	4.98	-14.90	5.60	-17.70	5.80	-14.33
NTAL		-29.35		-28.84		-31.64

TAL: Trade Adjustment Lending Countries, NTAL: Non Trade Adjustment Lending Countries, LAC: Latin America and the Caribbean MENA: Middle East and North Africa, and SSA: Sub Saharan Africa. See Appendix for Data definitions and sources.

Table 4: Average Rankings by region

	Per Capita Model (PC)			**% of GDP Model (PG)**		
	1980-82	**1990-92**	***Change***	**1980-82**	**1990-92**	***Change***
ASIA	23	18	5	20	17	3
TAL	22	19	3	22	16	6
NTAL	24	17	7	17	19	-2
EUROPE	25	38	-13	25	38	-13
TAL	22	37	-15	23	36	-14
NTAL	30	41	-11	31	42	-12
LAC	41	43	-2	44	44	0
TAL	40	42	-2	42	42	-1
NTAL	46	46	1	53	51	2
MENA	44	40	4	42	41	1
TAL	45	39	7	42	36	6
NTAL	42	41	1	42	48	-6
SSA	41	40	1	41	39	1
TAL	41	38	2	40	37	3
NTAL	45	53	-9	45	51	-6
Average **Dev Countries**	37	37	0	37	37	0
TAL	37	37	0	37	36	1
NTAL	37	37	0	37	41	-4

TAL: Trade Adjustment Lending Countries, NTAL: Non Trade Adjustment Lending Countries, LAC: Latin America and the Caribbean, MENA: Middle East and North Africa, and SSA: Sub Saharan Africa. See text and appendix for model specifications.

Appendix 1: Countries and Regions

Regions/Groups	Sub-groups	Countries
ASIA	TAL	Bangladesh, China, Korea, Pakistan, Papua New Guinea, Philippines, Thailand
	N-TAL	India, Indonesia, Malaysia, Myanmar, Nepal, Sri Lanka
EUROPE	TAL	Hungary, Poland, Turkey, Yugoslavia
	N-TAL	Greece, Portugal
LAC	TAL	Argentina, Bolivia, Brazil, Chile, Columbia, Costa Rica, Ecuador, El Salvador, Guyana, Honduras, Jamaica, Mexico, Panama, Uruguay, Venezuela
	N-TAL	Dominican Republic, Haiti, Paraguay, Peru
MENA	TAL	Jordan, Algeria, Morocco, Tunisia
	N-TAL	Oman, Syrian Arab Republic, Republic of Yemen, Egypt
SSA	TAL	Benin, Burundi, Cameroon, CAR, Chad, Congo, Cote d'Ivoire, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Niger, Nigeria, Senegal, Sierra Leone, Somalia, Tanzania, Togo, Uganda, Zaire, Zambia, Zimbabwe
	N-TAL	Angola, Botswana, Burkina Faso, Ethiopia, Lesotho, Liberia, Rwanda, Seychelles, South Africa, Sudan, Swaziland

TAL: Trade Adjustment Lending Countries, NTAL: Non Trade Adjustment Lending Countries, LAC: Latin America and the Caribbean, MENA: Middle East and North Africa, and SSA: Sub Saharan Africa.

Number	TAL	Non-TAL	**Total**
ASIA	7	6	13
EUROPE	4	2	6
LAC	16	4	20
MENA	4	4	8
SSA	30	11	41
Total	61	27	88

Appendix 2: Trade Intensity Regression Results:

See Appendix 3 for variable definitions and sources

× Model: ***Per Capita Model (1990-92)***

Dependent Variable: LNXCAP

Root MSE	0.80603	R-square	0.7308
Dep Mean	4.48788	Adj R-sq	0.7150
C.V.	17.96009		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for HO: Parameter=0	Prob . | T|
INTERCEPT	1	-1.914155	1.33314189	-1.436	0.1556
GDPCAP	1	1.232745	0.09644314	12.782	0.0001
LNPOP	1	-0.109333	0.07022402	-1.557	0.1241
XMCAP	1	-0.000811	0.00024164	-3.358	0.0013
WDIST	1	-0.287085	0.62194463	-0.462	0.6458

× Model: ***Percentage of GDP Model (1990-92)***

Dependent Variable: LNNXGDP

Root MSE	0.74302	R-square	0.2941
Dep Mean	2.28932	Adj R-sq	0.2526
C.V.	32.45575		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEPT	1	3.817564	1.26147436	3.026	0.0035
LGDPCAP	1	0.169402	0.08267847	2.049	0.0443
LNPOP	1	-0.140727	0.06513671	-2.160	0.0343
XMGDP	1	-0.041094	0.00817093	-5.029	0.0001
WDIST	1	-0.298465	0.56616950	-0.527	0.5998

× Model: ***Per Capita Model (1980-82)***

Dependent Variable: LNXCAP

Root MSE	0.91033	R-square	0.5261
Dep Mean	4.26550	Adj R-sq	0.4982
C.V.	21.34160		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.952294	1.53839749	0.619	0.5380
LGDPCAP	1	0.955871	0.12007169	7.961	0.0001
LNPOP	1	-0.179762	0.07848313	-2.290	0.0251
XMCAP	1	-0.000810	0.00025216	-3.212	0.0020
WDIST	1	-0.210637	0.68895996	-0.306	0.7607

× Model: ***Percentage of GDP Model (1980-82)***

Dependent Variable: LNNXGDP

Root MSE	0.83197	R-square	0.3222
Dep Mean	2.16972	Adj R-sq	0.2823
C.V.	38.34479		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEPT	1	6.770444	1.42770633	4.742	0.0001
LGDPCAP	1	-0.060069	0.10338999	-0.581	0.5632
LNPOP	1	-0.232360	0.07313389	-3.177	0.0022
XMGDP	1	-0.046902	0.00924012	-5.076	0.0001
WDIST	1	-0.212427	0.62297018	-0.341	0.7342

Appendix 3: Data Sources and Definitions

REER: Real Effective Exchange Rates (1980 = 100); from IECTRD/BESD Database. Data were not available for Yugoslavia, Dominican Rap., Haiti, Jordan, Oman, Angola, Benin, Guinea Bissau, Liberia.

M, CM, NFCM, NFM, and CON: Total Imports, Consumption Imports, Non-food Consumption Imports, Non-food Imports, and Total Consumption respectively; from IECTRD/BESD Database. Consumption Imports (CM) are defined as foods, textiles, and other manufactures imports. Data on most variables were not available for Yemen Rep., Botwana, Guinea, Lesotho, Mozambique, Rwanda, Swaziland.

BMP: Black Market Premium. Defined as the percentage difference between the parallel (black market) market rate and the official exchange rate. Black market rates are from the International Currency Analysis, Inc. (Various years), Official exchange rates are from BESD Database. No data were available for Papua New Guinea, Bolivia, Brazil, Guyana, Haiti, Honduras, Oman, Yemen Rep., Angola, Guinea Bissau, Seychelles.

References:

Anderson, J. E. 1996. "A New Approach to Evaluating Trade Policy," Review of Economic Studies, 63 (1, January): 107-25.

Balassa, B. and L. Bauwens. 1987. "Intra-Industry Specialization in a Multi-Country and Multi-Commodity Framework." The Economic Journal, 97 (December): 923-939.

Balassa, Bela. 1985. "Exports, Policy Choices and Economic Growth in Developing Countries After the 1973 Oil Shock," Journal of Development Economics, May-June.

Baldwin, R. 1989. "Measuring Nontariff Trade Policies," NBER Working Paper no. 2978. (May): 34-39, Cambridge, Massachusetts.

Dollar, D. "Outward-Oriented Developing Economies Really do Grow More Rapidly: Evidence from 95 LDCs, 1976-85," World Bank, mimeo.

Foroutan, F. 1993. "Trade Reforms in Ten Sub-Saharan Countries: Achievements and Failures," Policy Research Working Paper 1222, World Bank, Washington, D.C.

Laird, Samuel and A. Yeats. 1988. "Nontariff Barriers in Industrialized Countries: 1966-86," Finance and Development.

Leamer, Edward. 1988. "Measures of Openness," pp. 147-200 in Robert Baldwin, ed., Trade Policy Issues and Empirical Analysis, Chicago: University of Chicago Press.

Linnemann, Hans. 1966. An Econometric Study of International Trade Flows. Amsterdam: North Holland.

Nash, John. 1993. "Trade Policy Reform Implementation in Sub-Saharan Africa: How Much Heat and How Much Light?" Policy Research Working Paper no. 1218, World Bank, Washington, D.C.

Nogues, Julio, Andrezj Olechowski, and L. Alan Winters. 1986. "The Extent of Nontariff Barriers to Industrial Countries' Imports," World Bank Economic Review, 1: 181-199.

World Bank, 1991. World Development Report, 1991. Washington, D.C.: World Bank.

World Bank, 1995. Global Economic Prospects and the Developing Counntries. Washington, D.C.: World Bank.

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